DOCUMENT RESUME

ED 218 974 FL 013 074

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TITLE Rate-Alteration Technology and Its Place in the Language Laboratory.
PUB DATE 19 Aug 81
NOTE 16p.; Paper presented at the International Foreign Language Education and Technology Conference (1st, Tokyo, Japan, August 19, 1981).

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Cognitive Style; Higher Education; Individualized Instruction; Instructional Innovation; *Language Laboratories; *Listening Comprehension; Secondary Education; *Second Language Instruction; *Speech Compression; Student Motivation; Time Factors (Learning)
IDENTIFIERS *Rate Controlled Speech

ABSTRACT

A promising way to enhance student listening performance with recorded materials is to mechanically retard or advance the speed of the tape and electronically correct the accompanying shift in pitch. With a speech compressor/expander, the language laboratory can eliminate the negative psychological effects of too much speed. Beginning students especially benefit from the application of rate-alteration technology to lab programs. Student motivation is increased because the increase in comprehensibility is not at the expense of native quality of speech. Although second language learners come to the language lab with differing abilities and learning styles, all proceed through stages of listening comprehension from no comprehension in a stream of sound to eventual extended speech recognition. A proper sequencing of listening activities, providing an individualized curriculum design for field-dependent listeners, can be successfully combined with speech compression/expansion to systematically reinforce the student's confidence in his/her ability to comprehend native speech. (SW)

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RATE-ALTERATION TECHNOLOGY AND ITS PLACE IN THE LANGUAGE LABORATORY

by

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A Paper Presented at the First International Foreign Language Education and Technology Conference, Tokyo, Japan, August 19, 1981

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Rate-Alteration Technology and Its Place in the Language Laboratory

by

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Practically all second-language (L2) learners have some exposure to listening programs in a language laboratory situation. However, not all L2 students benefit from the experience, nor do they achieve the expected fluency in listening comprehension. This paper suggests some reasons for this and ways that applied technology can ameliorate the situation. When students enter the lab, they have different reasons and different goals in mind according to their stage of listening competency. They react to a variety of listening programs presented in a standard format: recorded spoken material is normally played out through earphones to the students in the lab. According to the appropriateness of the materials, each will be motivated to learn and progress. If we are to most skillfully prescribe ego-enhancing laboratory listening experiences, we must first acquaint ourselves with the stages of a L2 learner's development, and then postulate a coordinated curriculum design to meet student needs.

For an initial orientation to listener abilities at each level of proficiency, let us look at material from Taylor (1981:41-42). He has arbitrarily distinguished five stages of L2 listening development as follows:

Stage 1: Stream of Sound (zero comprehension of content)
Stage 2: Isolated word recognition within the stream (minimal comprehension of general content)
Stage 3: Phrase/formula recognition (marginal functional comprehension of content)
Stage 4: Clause/sentence recognition (minimally functional comprehension of content)
Stage 5: Extended speech recognition (general comprehension of unedited speech)

Development of corresponding listening materials is also a part of his plan. He suggests suprasegmentals (patterns of pitch, tone, stress, and timing) be played out for Stage 1. Stage 2 is characterized by a perception of spoken language generally as a blur of sound. During this stage, helping students change their language listening expectancies is in order so they can begin to hear all the message available. Depending on the first language of the learner, this could be accomplished through listening to contrastive analyses of the two languages in question. Stage 3 is characterized by acquisition of "survival" kinds of phrases and formulas with the accompanying recognition level of listening. Exercises in semantic-syntactic decoding and aural recognition as suggested by Rivers and Temperley (1978:88-93) apply at this stage. Stage 4 students can attach meaning to clauses and sentences without having previously memorized similar phrases or formulas. They have progressed to career-specific vocabulary listening practice. Here is where programs consisting of authentic speech from lectures about academic topics are appropriate, especially those with some unknown vocabulary. This is a confidence-building period in the students' development. Therefore, listening materials of native velocity should prevail. Stage 5 listeners exhibit native-listener fluency under situations of known vocabulary. Beyond these five levels we would want to include training in comprehending what Fishman (1978) calls the "latent content" of a verbal message.

Having adequately mapped out the developmental stages of student listening comprehension fluency, we shall consider the variety of students themselves which is available to us. L2 learners come to the language lab with differing abilities, differing backgrounds, and differing psychologi-

cal compositions. Some are good listeners, who, when they listen in their native tongue, are able to predict with a high degree of accuracy the total meaning of what they hear even if the message is coming at them at a rapid rate. They also handle varieties in register and dialect with ease. This describes their abilities as native listeners.

In contrast, neophyte L2 learners who may catch a large portion of what linguists call the surface structure, may or may not comprehend the real meaning of what they hear depending on their knowledge of the vocabulary in question and how much we have taught them about the reductions and elisions of fast speech and about the variations in speech which result from changes in register and dialect (cf: Bowen, 1972:409-421). They may miss portions of the "manifest content" (Fishman, 1978) and will miss all of the "latent content" or deep structure of the message. This produces great frustration among listeners.

Then we may be faced with students who are trying their best to learn a second language but who are handicapped by an inability to listen efficiently in their native tongue. When they are confronted with a rapid string of speech sounds they panic. In a study of this problem, M.D. Steer (1945) found that some people tend to pay too much attention to rate rather than content. They concentrate on how fast things are coming at them and when they miss a string of words, they become so overly tense and preoccupied with the part missed that they became hopelessly lost and miscomprehend the message. Apparently those who can listen efficiently for meaning are skilled listeners. Steer found that they are also field independent. Field indepency is a theoretical construct based on the ability to keep things apart in a perceptual field, to see patterns, and to respond without stress in no-

vel situations. In contrast, field dependent people are unable to disregard the more superficial aspects in order to detect order in unfamiliar (H.A. Witkin, et. al., 1962). Nearly ten years ago, Carver, Johnson and Friedman (1972) applied this same construct dichotomy to listening. They tested listeners who tended to concentrate more on the rate and less on the content. They used speeded speech in conjunction with measures of field dependency and found that the ability to comprehend highly speeded speech probably involves being field independent. In studying the effects of expanded speech, Flaherty (1975), Littell (1976), and Harvey (1981) have shown that for Stage 3 and Stage 4 second language learners, slowing down the second language speech cues on listening tests significantly helps listening performance in aural testing situations. Harvey (1981:59-60), also found that students at lower levels (Stage 3) of listening fluency had the most difficulty in adequately processing the syntactic groupings of words available in short-term memory. Inadequate processing for meaning in short-term memory produced a decrement in storage of meaning for comprehension. Another interesting finding which resulted from Harvey's research was that when students at a high level of proficiency of listening are exposed to expanded speech, their response accuracy also drops off. This was because of the over-ability of proficient second-language learners to process slowed-speech. They actually became bored and began searching for other sensorial inputs to process.

With this information in mind about the mental makeup of our students and how they react to listening programs according to their differing cognitive styles, let us move to a review of what technology has to offer which we could use in the language lab to foster good listening comprehension at

all stages of the listening process.

The most promising way to enhance student listening performance with recorded materials is to mechanically retard or advance the speed of the tape and electronically correct the accompanying shift in pitch. The device a student or teacher may use to modify the original recording is called a speech compressor/expander. The machine consists of a regular variable-speed cassette player which is equipped with electronic circuitry that, as the tape speed is changed, either deletes small, periodic samples of the taped message and electronically splices them together, or inserts speech signals into the message stream to slow it down. Expanded speech is produced by periodically repeating a small segment of a recorded message. This produces a message which is perceived as being slower than the usual native-speed at which speech is normally recorded. While the materials the students will use still lack the pauses and repetitions of authentic speech, the electronic alteration provided by the speech compressor/expander effectively reinserts the juncture pauses which are essential to comprehension and effectively negates the cognitive overloading that results from the mere velocity of the message (Sticht, 1970).

Now we've reached the point where its appropriate to question: How do we combine theory and technology to help our students in the language laboratory?" In answering this question let's refer back to Taylor's (1981) stages of listening development. (See Figure 1)

During his Stage 1, which is characterized by perception of a blur of sound, rate-alteration is inappropriate. However, at other levels students can realize measurable increases in their listening comprehension due to its use. For example, at Stage 2, the "blur of sound" would be reduced more

quickly to a string of meaningful but somewhat separated utterances if listening tapes were expanded electronically be a speech compressor/expander. As far as brain functioning is concerned, slowing down the tape presentation means that the short-term memory will be able to begin earlier to abstract meaning from the "blur." When meaning is available to long-term memory, psychological satisfaction occurs. As the student's vocabulary and syntactic maturity increase, and they are clearly in Stage 3, they have the greatest potential for success. This is the point where comprehension gives the greatest direction and intensity to students' behavior. Motivation to go on will accrue from the reduction of anxiety when, for some students, the "blur" is slowed down and the effects of "field" are eliminated, and for others, reinforcement comes from successful decoding because meaningful chunks are being stored in long-term memory.

Insert Figure 1 About Here

Because of the ability of the speech compressor/expander to speed up speech, i.e., "compress" it, as students reach Stage 4 we can take them from materials presented at slower speeds through materials presented at native speed. Then we can take them through certain graded materials beyond native velocity to materials presented faster than normal. After having experienced the challenge of greater-than-native velocity, then we should present to them the stimulating experience of being able to consciously compare the same material in speeded speech to a recording made at native speed. Thus we can provide our students the ego-enhancing learning which motivates further success.

Figure 1: A LISTENING CURRICULUM FOR MOTIVATING SECOND-LANGUAGE LEARNING

STAGE*	CHARACTERISTIC BEHAVIORS	CURRICULUM EXPERIENCE	RATE-ALTERATION APPLICATION	MATERIALS SOURCE
I	Perceives "Blur" or Stream or Sound - Zero comprehension of target language	Expose to exercises in supra-segmentals: Pitch, tone, stress, and timing	NONE	Teacher-produced in language laboratory or audio recording studio
II	From perception of "Blur" of sound to Isolated world comprehension within sound stream	Change expectancies thru contrastive analyses of students' native languages and target language. Total physical response exercises	Maximum Expansion	Teacher-produced Asher: Total Physical Response materials (1981) Winitz & Reeds (1975)
III	Phrase and/or Formula Recognition of a survival nature	Audio-motor units Semantic-syntactic Decoding, Aural Recognition Exercises Phrase Memorization	EXPANSION	Rivers & Temperley (1978:88-93)
IV	Attachs meaning to Clauses and Sentences Minimally Functional Comprehension	Career-specific vocabulary programs Interviews Authentic lectures about academic topics	Expansion; repetition at normal speed, repetition at low compressed speed	Teacher-produced Morley (1972) Kisslinger and Rost (1980)
V	Near-native listening fluency with known vocabulary	Authentic normal-speed interviews, TV sitcoms authentic speech by dialect and by register Structured Programs to elicit classroom behavior appropriate to University lecture situations	Expansion for Reading Remediation; Native-speed Repetition at multiple levels of compression; Expansion for new material of difficult vocabulary	Bowen, J. Donald (1972:409-42) Madsen and Bowen (1972) Morley (1976) Plaister (1976)

*After Taylor (1981:41-42)

Also worth mentioning at this juncture is the proper sequencing of listening activities at Stage 4 and above. Montassir (1976:173) outlines a four-step procedure. Taking his suggestions for classroom listening presentations and adapting to language lab programming they would be: 1) pre-listening--where students hear a recorded introducing of the material to be listened to; 2) selection is played at a slightly expanded velocity while students listen and try to respond to a comprehension task; 3) play out the right answers to the task; 4) present the selection a second time; however, this repetition should be at native velocity so they can "tune in" on what they may have missed or simply reinforce what they were already able to do. In this case its the repetition that brings the conviction.

Stage 4 second-language learners and certain Stage 3 and 4 students could best be served by access to individual use of rate-alteration machines.

For field-dependent, Stage 4 listeners, their needs can be met best by having an individualized curriculum design. They should be given recordings and instructed to listen to them at least three times each: the first time through they should slow the program down to 135 words per minute (w.p.m.) or 0.8 times normal--165 w.p.m. (Of course if they feel uncomfortable with this speed they can slow it down to 115 w.p.m. or 0.7 times normal); if they feel no anxiety, the program should then be challenges and confidence-builders--they should be instructed to set the speech compressor at 1.5 times normal (250 w.p.m.) and listen at faster than normal. At this point they can reinforce their feelings of accomplishment by then responding to some sort of a comprehension test appro-

priate for the lab program in question. The test should employ latent image technology for immediate feedback. The procedure for field-dependent Stage 3 students would be the same except the level of expansion would need to be increased to 0.7 times normal initially and more repetitions of expanded-speech would be prescribed, and the compression level would be kept at 1.3 times normal. The exciting feature of individualizing listening practice with a speech compressor/expander--and you must make sure the students understand this--is that at any time if students feel anxious about the meaning of the message, they should rewind, set the machine at a slower rate and listen again. Such a procedure puts students at their ease and enhances motivation, especially when the student has control over the relentless and many times frustrating pace of the lab program.

Stage 5 second-language learners benefit most from the compression feature of rate-alteration machines. As advanced learners they handle the aural aspect of syntax and register features with near-native fluency. However, if they are from cultures with a strong oral tradition they will have trouble becoming proficient readers. Reading materials should be recorded and then re-recorded under expansion and then compression conditions. This is so the student can acquire adequate sight-symbol coordination through reading while listening to the same passage recorded at faster-than-normal speed. Students whose listening comprehension may exceed their reading comprehension ability will benefit from the challenge of several increases in velocity.

It's easy to postulate the need for expansion of such difficult listening situations as: someone in distress trying to get help or give di-

rections over the phone; a sideshow barker or street vender hawking their wares; or the fast speech of T.V. sitcoms. Stage 5 second-language listeners may revert back to Stage 4 or even 3, especially if the vocabulary is unfamiliar. However, if the vocabulary is known then listening fluency and the ability to handle rapid speech is best built through successive exposures to progressively compressed versions of the original speech situation.

What becomes very clear to students and teachers alike is a need to focus on aural comprehension. In bringing people to native-like proficiency as they study a second language, we must give them a listening curriculum, not just classroom practice with unorganized but authentic listen experiences. Because every listener's ability may be different, even in his native language, we must utilize technology and the language lab to attend to the needs of every student. Curriculum materials of authentic speech should be the rule, not the exception. Conversational kinds of material should characterize lower-level listening experiences. Application of rate-alteration should be systematically made to all materials to reduce learner anxiety and enhance motivation. Passages should be short to begin with. Lecture kinds of materials where students must listen for specific information should be the backbone of the higher-level programs. Compression should be systematically applied to reinforce and build confidence in students' ability to comprehend speech heard at rapid, native-speed. Moreover, we must provide listening experiences which guide students to a high level of competence in the comprehension of everyday spoken language with its different registers and dialects.

From the foregoing we might conclude that its the repetition that brings conviction. However, may we suggest as our 20th-century students with all their complexities are seeking listening comprehension fluency, it is rate-alteration that brings the motivation.

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